

IN THE CLAIMS:

Please amend Claims 1-8, 10, and 11 as follows.

1. (Currently Amended) An information processing method of dividing a feature space in which a point set given as learning patterns is present to form a classification tree on the basis of the learning patterns, comprising:

~~the~~ a linear combination feature amount generation step of generating a plurality of new feature ~~amount~~ amounts by a linear combination of ~~the~~ feature amounts of the learning patterns;

~~the~~ a hierarchization pre-processing step of forming a plurality of hierarchical structures of the learning patterns by hierarchizing, in advance, each of the plurality of the new feature ~~amount~~ amounts generated in ~~the~~ said linear combination feature amount generation step; and

~~the~~ a classification tree generation step of generating a classification tree on the basis of the plurality of hierarchical structures formed learning patterns hierarchized in the said hierarchization pre-processing step.

2. (Currently Amended) The method according to claim 1, wherein in ~~the~~ said linear combination feature amount generation step, a coefficient of the linear combination is selected from a fixed set of coefficients.

3. (Currently Amended) The method according to claim 1, wherein in ~~the~~ said hierarchization pre-processing step, each of the plurality of the new feature ~~amount~~ amounts is hierarchized on the basis of a normal vector of ~~the~~ a hyperplane formed by the

linear combination in said ~~the~~ linear combination feature amount generation step and a hyperplane having the normal vector.

4. (Currently Amended) The method according to claim 3, wherein the hyperplane used in ~~the~~ said hierarchization pre-processing step includes a hyperplane perpendicular to ~~the~~ a feature amount axis.

5. (Currently Amended) The method according to claim 1, wherein  
~~in the hierarchization pre-processing step, a hierarchical structure is formed such that the structure is hierarchized for each feature amount, and~~  
in the said classification tree formation step, a classification efficiency is calculated from a the hierarchical structure of each of the plurality of the new feature ~~amount~~ amounts at each node, a feature amount used on the basis of the classification efficiency is determined, and a classification tree is formed.

6. (Currently Amended) The method according to claim 1, further comprising ~~the~~ a recognition step of recognizing a newly input pattern using the classification tree formed in the said classification tree formation step.

7. (Currently Amended) The method according to claim 1, wherein in ~~the~~ said hierarchization pre-processing step, each of the plurality of the new feature ~~amount~~ amounts is hierarchized on the basis of a range of values which can be taken by the learning patterns.

8. (Currently Amended) The method according to claim 1, wherein in the said hierarchization pre-processing step, each of the plurality of the new feature ~~amount~~ amounts is hierarchized on the basis of a profile of the learning patterns.

9. (Original) The method according to claim 1, wherein the learning pattern is any one of an image pattern, a speech pattern, and a character pattern.

10. (Currently Amended) An information processing apparatus for dividing a feature space in which a point set given as learning patterns is present to form a classification tree on the basis of the learning patterns, comprising:

linear combination feature amount generation means for generating a plurality of new feature ~~amount~~ amounts by a linear combination of ~~the~~ feature amounts of the learning patterns;

hierarchization pre-preprocessing means for forming a plurality of hierarchical structures of the learning patterns by hierarchizing, in advance, each of the plurality of the new feature ~~amount~~ amounts generated by said linear combination feature amount generation means; and

classification tree generation means for generating a classification tree on the basis of the plurality of hierarchical structures formed ~~learning patterns hierarchized~~ by said hierarchization pre-processing means.

11. (Currently Amended) A program stored in a computer-readable medium for controlling a computer to divide ~~dividing~~ a feature space in which a point set given as

learning patterns is present to form a classification tree on the basis of the learning patterns,  
the program comprising causing a computer to function as:

linear combination feature amount generation program codes instructing the  
computer to generate means for generating a plurality of new feature amount amounts by a  
linear combination of ~~the~~ feature amounts of the learning patterns;

hierarchization pre-preprocessing program codes instructing the computer to form  
means for a plurality of hierarchical structures of the learning patterns by hierarchizing, in  
advance, each of the plurality of the new feature amount amounts generated by the  
computer in response to instructions from said linear combination feature amount  
generation program codes means; and

classification tree generation program codes instructing the computer to generate  
means for generating a classification tree on the basis of the plurality of hierarchical  
structures formed learning patterns hierarchized by the computer in response to instructions  
by said hierarchization pre-processing program codes means.